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*First Named Inventor or Application Identifier*

Kenji Taguchi et al.

Title

RECORDING APPARATUS AND  
RECORDING METHOD OF VIDEO SIG

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## APPLICATION ELEMENTS

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- Descriptive title of the invention
  - Cross References to Related Applications
  - Statement Regarding Fed sponsored R & D
  - Reference to Microfilm Appendix
  - Background of the invention
  - Brief Summary of the invention
  - Brief Description of the Drawings (*if filed*)
  - Detailed Description
  - Claim(s)
  - Abstract of the Disclosure
3. ☒ Drawings(s) (35 USC 113) [Total Pages **6**]
4. ☒ Oath or Declaration [Total Pages **5**]

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| Signature         |  |                                   | Date    |
|                   |   |                                   | 8/17/02 |

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## US PATENT APPLICATION

Title of Invention: RECORDING APPARATUS AND RECORDING METHOD OF  
VIDEO SIGNAL

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Other Countries Filed: EP (DE, FR, GB)

Our Ref. No.: P000108US

VICTOR COMPANY OF JAPAN, LIMITED

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# RECORDING APPARATUS AND RECORDING METHOD OF VIDEO SIGNAL

## BACKGROUND OF THE INVENTION

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### Field of the Invention:

The present invention relates to a recording apparatus of a video signal and a recording method of the video signal, particularly, relates to a recording apparatus of a video signal, which can record both moving picture information and still picture information, and a recording method of the video signal for recording both the moving picture information and the still picture information.

### 15 Description of the Related Art:

There provided a video signal recording apparatus, which comprises a video camera equipped with an image sensing device such as a CCD (charge coupled device) and a recording and reproducing apparatus for recording a video signal on a recording medium such as a magnetic tape being organized in one body. Such the video signal recording apparatus is mainly utilized for recording a moving picture information. However, a recording apparatus, which can record both moving picture information and still picture information, has been introduced in accordance with a recent demand for recording a still picture information as well as a moving picture information.

Such the video signal recording apparatus of the prior art is constructed as shown in Fig. 10, for example. In Fig. 10, the

recording apparatus comprises the CCD 1, the analog to digital converter (AD) 2 for converting an analog signal outputted from the CCD 1 into a digital signal, the signal processor 3 for converting a digital video signal outputted from the AD 2 into a luminance signal and a color difference signal and for outputting a digital video signal (moving picture information), the field memory 4 for storing the digital video signal outputted from the signal processor 3 field by field and for outputting a recorded digital video signal (still picture information) per one field, the switch 5 for supplying either the digital video signal (moving picture information) outputted from the signal processor 3 or the digital video signal (still picture information) outputted from the field memory 4 to the succeeding recording section. The recording section further comprises the video tape recorder (VTR) 6, which records a digital video signal outputted from the switch 5 on a magnetic tape, the recording medium 7 such as a memory card composed of a semiconductor memory and a hard disk drive (HDD) for recording a digital video signal outputted from the switch 5 and the view finder 8 for displaying a digital video signal outputted from the switch 5.

However, in a case of recording such a still picture information as shown in Fig. 4, the current video signal recording apparatus mentioned above records the still picture information on both the VTR 6 and the recording medium 7 or on either one after confirming the still picture information to be recorded by the view finder 8 with switching the switch 5 over to the field memory 4. The VTR 6 can not record a moving picture information while recording a still picture information. Accordingly, there existed a

problem that a desire for recording some moving picture information such as shown in Fig. 5, for example, can not be realized while recording a still picture information.

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## SUMMARY OF THE INVENTION

Accordingly, in consideration of the above-mentioned problem of the prior art, an object of the present invention is to provide a recording apparatus of a video signal and a recording method of the video signal, which can simultaneously confirm a moving picture information and a still picture information by displaying both the still picture information and the moving picture information simultaneously on a viewfinder. Further, by selectively switching a digital video signal to be inputted to a video tape recorder (VTR), the recording apparatus and the recording method can select a still picture information to be recorded while recording a moving picture information and can record the still picture information on another recording medium other than one for recording the moving picture information.

In order to achieve the above object, the present invention provides, according to an aspect thereof, a recording apparatus of a video signal comprising: a first recording means for recording a digital video signal of a moving picture information on a first recording medium; a second recording means for recording a digital video signal of a still picture information on a second recording medium; switch means for designating a preparation of recording the still picture information; and a display means for

displaying either one of the moving picture information and the still picture information or both of them after processing them for altering a picture size on one screen when the switch means is operated, the recording apparatus records the still picture information to be recorded on the second recording medium after the still picture information is confirmed.

According to another aspect of the present invention, there provided a recording system of a video signal, which comprises steps of: recording a digital video signal of a moving picture information on a first recording medium; recording a digital video signal of a still picture information on a second recording medium; displaying either one of the moving picture information and the still picture information or both of them after processing them for altering a picture size on one screen when a switch means for designating a preparation of recording the still picture information is operated; and recording the still picture information to be recorded on the second recording medium after the still picture information is confirmed.

Other object and further features of the present invention will be apparent from the following detailed description when read in conjunction with the accompanying drawings.

## BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 is a block diagram of a recording apparatus of a video signal according to a first embodiment of the present invention.

Fig. 2 is a block diagram of a recording apparatus of a video

signal according to a second embodiment of the present invention.

Fig. 3 is a block diagram of a recording apparatus of a video signal according to a third embodiment of the present invention.

Fig. 4 shows an exemplary indication of a still picture  
5 information.

Fig. 5 shows an exemplary indication of a moving picture information.

Fig. 6 shows an exemplary indication of superimposing a still picture information on a moving picture information.

Fig. 7 shows an exemplary indication of a still picture  
10 information and a moving picture information in parallel.

Fig. 8 shows another exemplary indication of a still picture information and a moving picture information in parallel.

Fig. 9 shows an exemplary indication of superimposing a  
15 moving picture information on a still picture information.

Fig. 10 is a block diagram of a recording apparatus of a video signal according to the prior art.

## 20 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

### [First Embodiment]

Fig. 1 is a block diagram of a recording apparatus of a video signal according to a first embodiment of the present invention.

Fig. 4 shows an exemplary indication of a still picture  
25 information.

Fig. 5 shows an exemplary indication of a moving picture information.



Fig. 6 shows an exemplary indication of superimposing a still picture information on a moving picture information.

In Fig. 1, a recording apparatus of a video signal comprises a CCD (charge coupled device) 1, an analog to digital converter (AD) 2, a signal processor 103, a field memory 104, a reducing circuit 109, a first switch 110, a second switch 111, a controlling section 112, a recording (REC) switch 113, a still (STILL) switch 114, a video tape recorder (VTR) 6, a recording medium 7 and a view finder 8. The CCD 1 is an image sensing device. The AD 2 converts an analog signal outputted from the CCD 1 into a digital signal. The signal processor 103 converts a digital video signal outputted from the AD 2 into a luminance signal and a color difference signal and outputs a digital video signal (moving picture information). The field memory 104 stores the digital video signal outputted from the signal processor 103 field by field and outputs a recorded digital video signal (still picture information) per one field. The reducing circuit 109 is supplied with a digital video signal (still picture information) outputted from the field memory 104 and reduces a screen size of the digital video signal (still picture information) to a predetermined ratio in horizontal and vertical directions and outputs the reduced digital video signal (still picture information). The reducing circuit 109 can be realized by a reducing electronic zooming function such as, for example, a circuit of realizing a reducing function by obtaining imaginary pixel data through an operation about an interpolation process such as linear interpolation and spline interpolation, which are applied to a plurality of actual pixel data adjacent to vertical and horizontal directions, and another circuit of realizing a reducing

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function by reading out pixels of a digital video signal read out from the field memory 104 through decimating process such that one pixel is decimated from 3 pixels. The first switch 110 selectively switches a digital video signal (moving picture information) outputted from the signal processor 103 over to a digital video signal (still picture information) from the reducing circuit 109 or vice versa and outputs a selected digital signal to the VTR 6. The second switch 111 selectively switches a digital video signal (moving picture information) outputted from the signal processor 103 over to a digital video signal (still picture information) from the reducing circuit 109 or vice versa and outputs a selected digital signal to the view finder 8. The controlling section 112 controls operations of the recording apparatus of video signal totally. The REC switch 113 initiates to record a moving picture information. The STILL switch 114 initiates to record a still picture information. The recording medium 7 is a medium such as a memory card composed of a semiconductor memory and a hard disk drive (HDD) for recording a digital video signal outputted from the field memory 104.

A basic operation of the recording apparatus shown in Fig. 1 is depicted first. A control signal is emitted from the controlling section 112 by pressing the REC switch 113 for initiating recording of a moving picture and the first switch 110 is selectively switched over to a terminal "A". Accordingly, a digital video signal (moving picture information) outputted from the signal processor 103 is supplied to the VTR 6 and the VTR 6 records the moving picture information on a magnetic tape. At the same time, the control signal emitted from the controlling section

112 makes the second switch 111 selectively switch over to a terminal "A", so that the digital video signal (moving picture information), which is currently recorded by the VTR 6, is displayed on the view finder 8. A digital video signal (moving picture information) outputted from the signal processor 103 is wrote in the field memory 104 in units of one field, so that a digital video signal (moving picture information) is recorded in the field memory 104 in units of sequential field while recording a digital video signal (moving picture information) by the VTR 6.

- 10 In a case of recording a still picture information while recording a moving picture information, a control signal is emitted from the controlling section 112 when the STILL switch 114 is kept pressing down to a halfway of a switching stroke or pressing down slightly. The control signal stops writing in the field memory 104.
- 15 Accordingly, the field memory 104 is recorded with a digital video signal (still picture information) at a time when the STILL switch 114 is pressed down to a halfway of the switching stroke.

- Further, in a case that the STILL switch 114 is pressed down to a halfway, the controlling section 112 supplies another control
- 20 signal to the field memory 104 and the reducing circuit 109, wherein the control signal is designated to reduce a digital video signal (still picture information) recorded in the field memory 104 to a predetermined size. Accordingly, the reducing circuit 106 outputs a reduced digital video signal (still picture information),
- 25 which is reduced from the digital video signal (still picture information) recorded in the field memory 104, to the second switch 111.

The second switch 111 is selectively switched over from the

terminal "A" to the terminal "B" in response to the control signal from the controlling section 112 at a timing when a still picture information is superimposed on a predetermined allocation in a whole picture frame of a moving picture information as shown in

5 Fig. 6. Accordingly, the view finder 8 displays a picture as shown in Fig. 6 such that a digital video signal (moving picture information) outputted from the signal processor 103 as shown in Fig. 5 is superimposed with a digital video signal (still picture information) outputted from the reducing circuit 109 as shown in

10 Fig. 4.

In a case of recording a still picture information displayed on the viewfinder 8 in the recording medium 7, a digital video signal (still picture information) is read out from the field memory 104 with a control signal generated in the controlling section 112 when

15 the STILL switch 114 is fully pressed down. The digital video signal (still picture information) is transferred to the recording medium 7 without any reduction, and then it is written in a predetermined address of the recording medium 7.

#### [Second Embodiment]

Fig. 2 is a block diagram of a recording apparatus of a video

20 signal according to a second embodiment of the present invention.

In Fig. 2, a recording apparatus comprises the CCD 1, the AD 2, the signal processor 103, the field memory 104, a third switch 215, a line memory 214, the first switch 110, the second switch 111, a controlling section 212, the REC switch 113, the STILL switch

25 114, the VTR 6, the recording medium 7 and the viewfinder 8. The recording apparatus depicted in the second embodiment is similar

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to that of the first embodiment shown in Fig. 1 and further comprises the third switch 215 and the line memory 216 in addition to the recording apparatus of the first embodiment shown in Fig. 1. The third switch 215 selectively switches a digital video  
5 signal (moving picture information) outputted from the signal processor 103 over to a digital video signal (still picture information) from the field memory 104 or vice versa and outputs a selected digital signal to the VTR 6. The line memory 214 is inputted with a digital video signal supplied from the third switch  
10 215 and outputs the digital video signal with being delayed for a degree of one half line.

In a case that the third switch 215 is selectively switched over to a terminal "A" by a control signal from the controller section 212, a digital video signal (still picture information) read  
15 out from the field memory 104 by a speed of two times faster than that of writing in the field memory 104 is supplied to a terminal "A" of the second switch 111 and a digital video signal (moving picture information) outputted from the signal processor 103 is supplied to a terminal "B" of the second switch 111 through the  
20 third switch 215 and the line memory 214 with being delayed for a degree of one half line. During a first half period from a beginning of a line to one half of the line, the controlling section 212 outputs a control signal for selecting the terminal "A" of the second switch 111. During a second half period from one half to an end of the line,  
25 the controlling section 212 outputs a control signal for selecting the terminal "B" of the second switch 111. Accordingly, the viewfinder 8 displays a picture shown in Fig. 7 such that a digital video signal (still picture information) recorded in the field

memory 104 is displayed on a left half area of a screen and a digital video signal (moving picture information) outputted from the signal processor 103 is displayed on a right half area of the screen.

5 Further, in a case that the third switch 215 is selectively switched over to a terminal "A" by a control signal from the controlling section 212, the viewfinder 8 displays a picture shown in Fig. 8 such that a digital video signal (moving picture information), which is clipped from a center area of a digital video  
10 signal (moving picture information) outputted from the signal processor 103, is displayed on a left half area of a screen and a digital video signal (still picture information), which is clipped from a center area of a digital video signal (still picture information) outputted from the field memory 104, is displayed on  
15 a right half area of the screen.

#### [Third Embodiment]

Fig. 3 is a block diagram of a recording apparatus of a video signal according to a third embodiment of the present invention.

20 Fig. 9 shows an exemplary indication of superimposing a moving picture information on a still picture information.

In Fig. 3, a recording apparatus comprises the CCD 1, the AD 2, the signal processor 103, a first field memory 104, a second field memory 341, a third switch 315, a fourth switch 316, the reducing  
25 circuit 109, the first switch 110, the second switch 111, a controlling section 312, the REC switch 113, the STILL switch 114, the VTR 6, the recording medium 7 and the viewfinder 8. The recording apparatus depicted in the third embodiment is similar

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to that of the first embodiment shown in Fig. 1 and further constituted such that the second field memory 341 is provided between the signal processor 103 and the terminal "A" of the first switch 110, the fourth switch 316 is inserted after the second field memory 341, and the third switch 315 is provided prior to the reducing circuit 109 so as to selectively switch an output signal of the first field memory 104 over to an output signal of the second field memory 341 or vice versa. The second field memory 341 is recorded with a digital video signal (moving picture information) outputted from the signal processor 103. The first field memory 104 records a still picture information, which is taken at a time when the STILL switch 114 is pressed down to a halfway of a switching stroke.

In a case of displaying a still picture information as a sub picture frame as shown in Fig. 9, the fourth switch 316 is switched over to a terminal "A" so as to select a digital video signal (moving picture information) outputted from the second field memory 341 and the third switch 315 is switched over to a terminal "B" so as to select a digital video signal (still picture information) outputted from the first field memory 104 respectively by a control signal from the controlling section 312.

While the third and fourth switches 315 and 316 are switched over to the terminal "B" and "A" respectively as mentioned above, if the STILL switch 114 is pressed down to a halfway of switching stroke writing into the first field memory 104 is interrupted by a control signal from the controlling section 312 and a still picture information, which is taken at a time when the STILL switch 114 is pressed down to a halfway of switching stroke,

is maintained in the first field memory 104. The second field memory 341 is written with a digital video signal (moving picture information) supplied from the signal processor 103 field by field and sequentially read out, so that a digital video signal outputted  
5 from the second field memory 341 becomes a moving picture information.

A digital video signal (still picture information) read out from the first field memory 104 is inputted to the reducing circuit 109 through the third switch 315 and outputted to the terminal  
10 "B" of the second switch 111 as a reduced picture in a predetermined size. On the other hand, a digital video signal (moving picture information) read out from the second field memory 341 is outputted to the terminal "A" of the second switch 111 through the fourth switch 316. The controlling section 312  
15 generates a control signal for selectively switching the terminal "A" of the second switch 111 over to the terminal "B" at a timing when a still picture information is superimposed on a moving picture information. Accordingly, a moving picture information is displayed as a main picture frame and a still picture information  
20 is displayed in a sub picture frame as shown in Fig. 6.

In a case of displaying a moving picture information in a sub picture frame as shown in Fig. 9, the controlling section 312 generates a control signal to shift the fourth switch 316 to the terminal "B" so as to select a digital video signal (still picture  
25 information) outputted from the first field memory 104 and the third switch 315 to the terminal "A" so as to select a digital video signal (moving picture information).

While the third and fourth switches 315 and 316 are



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switched over to the terminal "A" and "B" respectively as mentioned above, if the STILL switch 114 is pressed down to a halfway of switching stroke writing into the first field memory 104 is interrupted by a control signal from the controlling section 312 and a still picture information, which is taken at a time when the STILL switch 114 is pressed down to a halfway of switching stroke, is maintained in the first field memory 104. The second field memory 341 is written with a digital video signal (moving picture information) supplied from the signal processor 103 field by field and sequentially read out, so that a digital video signal outputted from the second field memory 341 becomes a moving picture information.

A digital video signal (moving picture information) read out from the second field memory 341 is inputted to the reducing circuit 109 through the third switch 315 and outputted to the terminal "B" of the second switch 111 as a reduced picture in a predetermined size. On the other hand, a digital video signal (still picture information) read out from the first field memory 104 is outputted to the terminal "A" of the second switch 111 through the fourth switch 316. The controlling section 312 generates a control signal for selectively switching the terminal "A" of the second switch 111 over to the terminal "B" at a timing when a moving picture information is superimposed on a still picture information. Accordingly, a still picture information is displayed as a main picture frame and a moving picture information is displayed in a sub picture frame as shown in Fig. 9.

While the invention has been described above with reference to specific embodiment thereof, it is apparent that many changes,

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modifications and variations in the arrangement of equipment and devices and in materials can be made without departing from the invention concept disclosed herein. For example, the picture shown in Fig. 7 is the one example for displaying 2 pictures in parallel on one screen such that these 2 pictures are clipped from only the center area of respective digital video signals. However, it is possible to display a composite picture such that one picture to be displayed on the left side of the screen is clipped from a center area of the digital video signal (still picture information) currently displayed on the left, on the other hand, another picture to be displayed on the right side of the screen is a whole picture information by compressing a digital video signal (moving picture information) outputted from the signal processor 103 in a horizontal direction. Further, the digital video signal (moving picture information) on the right side of the screen can be displayed as it is. However, in this case, right half of the moving picture information can not be displayed. With respect to the still picture information displayed on the left side of the screen, it can be displayed with compressing in a horizontal direction or can be outputted as it is.

In addition thereto, the picture shown in Fig. 8, it is also possible to display the whole still picture information or moving picture information with compressing in the horizontal direction as mentioned above. It can also be displayed such that both still and moving picture information is compressed in the horizontal direction. Furthermore, by outputting either moving picture information or still picture information or both of them, it is possible to display a picture based on the format shown in Fig. 8.

As mentioned above, according to the present invention, while a moving picture information is recorded, a still picture information can be recorded with continuously recording and confirming the moving picture information. Accordingly, it can be  
5 eliminated that unnecessary still picture information is recorded and necessary moving picture information is failed to be confirmed or recorded while recording a still picture. Further, it is advantageous for an operator of a recording apparatus of the present invention to record both still picture and moving picture  
10 information simultaneously with a sense of congruity.

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WHAT IS CLAIMED IS:

1. A recording apparatus of a video signal comprising:

a first recording means for recording a digital video signal of a moving picture information on a first recording medium;

a second recording means for recording a digital video signal of a still picture information on a second recording medium;

switch means for designating a preparation of recording said still picture information; and

a display means for displaying either one of said moving picture information and said still picture information or both of them after processing them for altering a picture size on one screen when said switch means is operated,

said recording apparatus records said still picture information to be recorded on the second recording medium after said still picture information is confirmed.

2. A recording method of a video signal comprising steps of:

recording a digital video signal of a moving picture information on a first recording medium;

recording a digital video signal of a still picture information on a second recording medium;

displaying either one of said moving picture information and said still picture information or both of them after processing them for altering a picture size on one screen when a switch means for designating a preparation of recording said still picture information is operated; and

recording said still picture information to be recorded on the

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second recording medium after said still picture information is confirmed.

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## ABSTRACT

When a still picture information is recorded on the recording medium 7 while a moving picture information is recorded by the  
5 VTR 6, a still picture information to be recorded can be confirmed and recorded by displaying the still picture information to be recorded in a sub picture frame on the screen of the viewfinder 8, which displays the moving picture information currently recorded.

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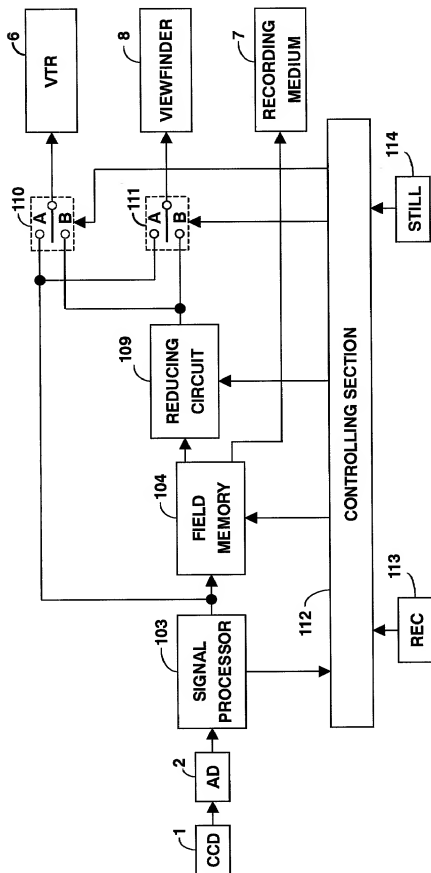


Fig. 1

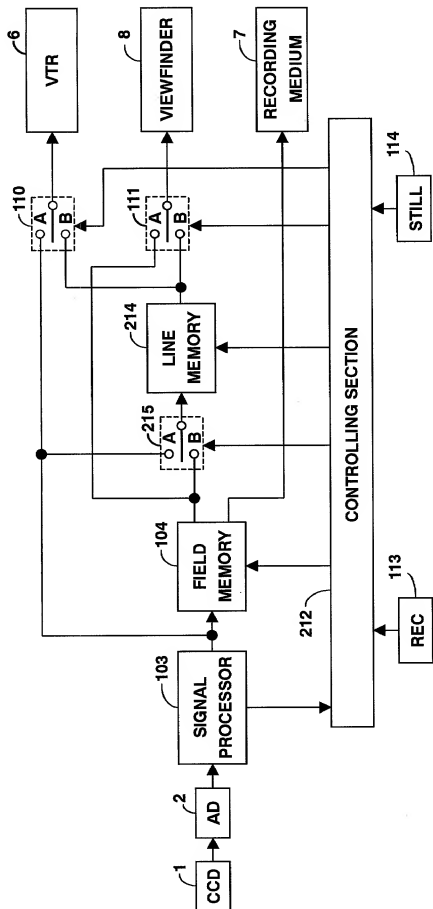


Fig. 2





**Fig. 3**



Fig. 4

Still Picture



Fig. 5

Moving Picture

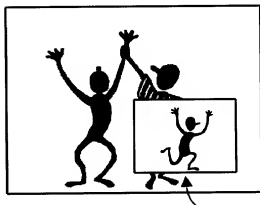


Fig. 6

Moving Picture      Still Picture



Fig. 7

Still Picture      Moving Picture

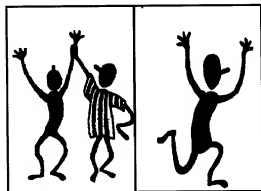


Fig. 8

Moving Picture      Still Picture

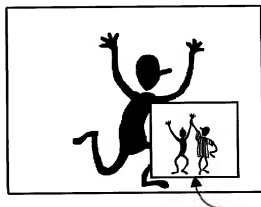


Fig. 9

Still Picture      Moving Picture

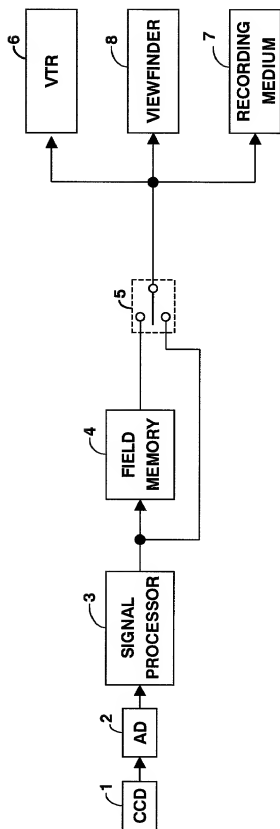


Fig. 10 Prior Art

## Declaration and Power of Attorney For Patent Application

## 特許出願宣言書及び委任状

## Japanese Language Declaration

## 日本語宣言書

下記の氏名の発明者として、私は以下のとおり宣言します。

私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の氏名が複数の場合）信じています。

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

## RECORDING APPARATUS AND RECORDING METHOD OF VIDEO SIGNAL

上記発明の明細書（下記の欄で×印がつけいていない場合は、本書に添付）は、

- ☐ \_\_\_\_月 \_\_\_\_日に提出され、米国出願番号または特許協定条約国際出願番号を \_\_\_\_ とし、  
（該当する場合） \_\_\_\_ に訂正されました。

the specification of which is attached hereto unless the following box is checked:

- ☐ was filed on \_\_\_\_  
as United States application Number or  
PCT international Application Number  
\_\_\_\_ and was amended on  
\_\_\_\_ (if applicable).

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37編第1条56項に定義されるとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

## Japanese Language Declaration

(日本語宣言書)

私は、米国法典第35編119条(a)-(d)項又は365条(b)項に基づき下記の、米国以外の国の少なくとも一方国を指定している特許協力条約365(a)項に基づく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している。本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

## Prior foreign application(s)

外国での先行出願

Priority Not claimed

優先権主張なし

11-249814/1999

(Number)

(番号)

Japan

(Country)

(国名)

03/September/1999

(Day/Month/Year Filled)

(出願年月日)



(Number)

(番号)

(Country)

(国名)

(Day/Month/Year Filled)

(出願年月日)



私は、第35編米国法典119(e)項に基づいて下記の米国特許出願規定に記載された権利をここに主張します。

(Application No.)

(出願番号)

(Filing Date)

(出願日)

(Application No.)

(出願番号)

(Filing Date)

(出願日)

私は、下記の米国法典第35編120条に基づいて下記の米国特許出願に記載された権利、又は米国を指定している特許協力条約365条(c)に基づく権利をここに主張します。また、本出願の各請求範囲の内容が米国法典第35編112条第1項又は特許協力条約で規定された方法で先行する米国特許出願に開示されていない限り、その先行米国出願書提出日以降で本出願書の日本国内または特許協力条約国際提出日までの期間中に入手された、連邦規則法典第37編1条5.6項で定義された特許資格の有無に関する重要な情報について開示義務があることを認識しています。

(Application No.)

(出願番号)

(Filing Date)

(出願日)

(Status: Patented, Pending, Abandoned)

(現況: 特許特許済、係属中、放棄済)

(Application No.)

(出願番号)

(Filing Date)

(出願日)

(Status: Patented, Pending, Abandoned)

(現況: 特許特許済、係属中、放棄済)

私は、私自身の知識に基づいて本宣言書で私が行う表明が真実であり、かつ私の入手した情報と私の信じるところに基づく表明が全て真実であると信じていること、さらに故意になされた虚偽の表明及びそれと同等の行為は米国法典第18編第1001条に基づき、罰金もしくは禁錮、もしくはその両方により処罰されること、そしてそのような故意による虚偽の声明を行えば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく宣誓を致します。

I hereby claim foreign priority under Title 35, United States Code, Section 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States, listed below and have also identified below, by checking box, any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed:

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) or any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

TP 000/0000

# Japanese Language Declaration (日本語宣言書)

委任状： 私は、下記の発明者として、本出願に関する一切の手続きを米国特許商標局に対して遂行する弁理士または代理人として、下記の者を指名致します。(弁理士、又は代理人の氏名及び登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

Morris Liss, Registration No. 24,510

書類の送付先

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| 唯一または第一発明者名   | Full name of sole or first inventor        |                |
| 発明者の署名  | Kenji Taguchi                              | Date           |
| 日付  | Inventor's signature                       | August 2, 2000 |
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| 第二共同発明者の署名  | Kenji Matsuoka                             | Date           |
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(第三以降の共同発明者についても同様に記載し、署名をすること。)

(Supply similar information and signature for third and subsequent joint inventors.)

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|            |  |
|------------|--|
| 第三共同発明者    | Full name of third joint inventor, if any                            |
| 第三共同発明者の署名 | Nobuyuki Matsukawa   |
| 日付         | Third inventor's signature Date                                      |
| 住所         | Nobuyuki Matsukawa August 2, 2000                                    |
| 国籍         | Residence  |
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| 第五共同発明者    | Fourth inventor's signature Date                                     |
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| 国籍         | Fifth inventor's signature Date                                      |
| 私書箱        | Hiroyuki Miyahara August 2, 2000                                     |
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| 第七共同発明者の署名 | 2-1-14-C202, Motoohashi, Sakae-ku, Yokohama-shi, Kanagawa-ken, Japan |
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| 第八共同発明者の署名 | Michihiro Aso  |
| 日付         | Sixth inventor's signature Date                                      |
| 住所         | Michihiro Aso August 2, 2000   |
| 国籍         | Residence  |
| 私書箱        | 1-3-18, Nakashirane, Asahi-ku, Yokohama-shi, Kanagawa-ken, Japan     |
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| 第九共同発明者の署名 | Japan  |
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| 住所         | Same as residence  |
| 国籍         |  |
| 私書箱        |  |



|            |  |                              |                |
|------------|--|------------------------------|----------------|
| 第七共同発明者    | Full name of seventh joint inventor, if any                        |                              |                |
|            | Takayuki Ohtsuka   |                              |                |
| 第七共同発明者の署名 | 日付   | Seventh inventor's signature | Date           |
|            |  | <i>Takayuki Ohtsuka</i>      | August 2, 2000 |
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| 住所         | Residence  |                              |                |
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| 国籍         | Citizenship  |                              |                |
|            |  |                              |                |
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| 国籍         | Citizenship  |                              |                |
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